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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/787,373

02/25/2004

Terence Edwin Dodgson

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EXAMINER

BROWN JR. NATHAN H

ART UNIT

PAPER NUMBER

2121

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/787,373

Applicant(s)

DODGSON, TERENCE EDWIN

Examiner

Nathan H. Brown, Jr.

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE (3) MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on October 25, 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Examiner's Detailed Office Action

1. This Office Action is responsive to the communication for application 10/787,373, filed October 25, 2006.
2. Claims 1-4 and 6-10 are pending. Claim 5 is cancelled.
3. After the previous office action, claims 1-10 stood rejected and claims 5, 9, and 10 were objected to as being dependent upon a rejected base claim, and claim 1 was objected to for various informalities.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-3 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter: algorithm. The invention of independent claim 1 is a "method of training a neural network to perform decoding of a time-varying signal comprising a sequence of input symbols". Training neural networks is well known to be an algorithm process of repeatedly adjusting the weights (parameters) of a neural network model until the error between the output

produced by the neural network and the desired output for each input-output pair to be handled by the neural network is minimized. Therefore, claim 1 is a process claim that includes the § 101 judicial exception of algorithm. Claim 1 entails no physical transformation. While the performance of decoding a time-varying signal comprising a sequence of input symbols is concrete and useful, the tangible requirement does require that the claim must recite more than a § 101 judicial exception, and must set forth a practical application of that § 101 judicial exception to produce a real-world result. Claim 1 recites, “comparing the network outputs with the input signals; and adapting parameters of the network to reduce the differences there between” as a final result of the method. Adapting the parameters of the neural network is not a real-world result, just an adjustment to a mathematical model. Claims 1-3, therefore, recite no more than the § 101 judicial exception of algorithm and are thus non-statutory under 35 U.S.C. 101.

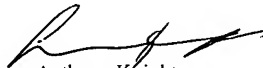
6. Claims 4 and 6-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter: mathematical abstraction and/or algorithm. The invention of independent claim 4 is a “neural network for decoding encoded communications in which input symbols are convolutionally encoded”. A neural network is a well-known class of mathematical model (i.e., abstraction) capable of finding minimizations of various cost functions when implemented as a computer process. Now, “acts” of a claimed process that manipulates only numbers, abstract concepts or ideas, or signals representing any of the foregoing, are acts not being applied to appropriate subject matter. Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does

not manipulate appropriate subject matter and thus cannot constitute a statutory process. Claims 4 and 6-10 recite a model for decoding encoded communications. Decoding encoded communications inherently involves converting one set of numbers into another set of numbers. Claims 4 and 6-10, are therefore non-statutory under 35 U.S.C. 101.

The Office regrets any previous suggestion of allowability.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan H. Brown, Jr. whose telephone number is 571-272- 8632. The examiner can normally be reached on M-F 0830-1700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Anthony Knight

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Art Unit: 2121

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Supervisory Patent Examiner
Tech Center 2100

Nathan H. Brown, Jr.
January 6, 2007